UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO.

: 6,866,024 B2

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APPLICATION NO.: 10/092031

DATED

: March 15, 2005

INVENTOR(S)

: Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 4, lines 46-54, please delete

$$a_{0}\Sigma 1 + a_{1}\Sigma x_{1,k} + a_{2}\Sigma x_{2,k} + a_{3}\Sigma x_{3,k} + a_{4}\Sigma x_{4,k} = \Sigma y_{true,k}$$

$$a_{0}\Sigma x_{1,k} + a_{1}\Sigma x_{1,k}^{2} + a_{2}\Sigma x_{1,k} x_{2,k} a_{3}\Sigma x_{1,k} x_{3,k} a_{4}\Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{true,k}$$

$$a_{0}\Sigma x_{2,k} + a_{1}\Sigma x_{1,k} x_{2,k} + a_{2}\Sigma x_{2,k}^{2} + a_{3}\Sigma x_{2,k} x_{3,k} + a_{4}\Sigma x_{2,k} x_{4,k} = \Sigma x_{2k} y_{true,k}$$

$$a_{0}\Sigma x_{3,k} + a_{1}\Sigma x_{1,k} x_{3,k} + a_{2}\Sigma x_{2,k} x_{3,k} + a_{3}\Sigma x_{3,k}^{2} a_{4}\Sigma x_{4,k} x_{3,k} = \Sigma x_{3,k} y_{true,k}$$

$$a_{0}\Sigma x_{4,k} + a_{1}\Sigma x_{1,k} x_{4,k} + a_{2}\Sigma x_{2,k} x_{4,k} + a_{3}\Sigma x_{3,k} x_{4,k} + a_{4}\Sigma x_{4,k}^{2} = \Sigma x_{4,k} y_{true,k}$$

and insert

$$a_{0} \sum l + a_{1} \sum x_{l,k} + a_{2} \sum x_{2,k} + a_{3} \sum x_{3,k} + a_{4} \sum x_{4,k} = \sum y_{true,k}$$

$$a_{0} \sum x_{l,k} + a_{1} \sum x_{l,k}^{2} + a_{2} \sum x_{l,k} x_{2,k} + a_{3} \sum x_{l,k} x_{3,k} + a_{4} \sum x_{l,k} x_{4,k} = \sum x_{l,k} y_{true,k}$$

$$a_{0} \sum x_{2,k} + a_{1} \sum x_{l,k} x_{2,k} + a_{2} \sum x_{2,k}^{2} + a_{3} \sum x_{2,k} x_{3,k} + a_{4} \sum x_{2,k} x_{4,k} = \sum x_{2,k} y_{true,k}$$

$$a_{0} \sum x_{3,k} + a_{1} \sum x_{l,k} x_{3,k} + a_{2} \sum x_{2,k} x_{3,k} + a_{3} \sum x_{3,k}^{2} + a_{4} \sum x_{4,k} x_{3,k} = \sum x_{3,k} y_{true,k}$$

$$a_{0} \sum x_{4,k} + a_{1} \sum x_{l,k} x_{4,k} + a_{2} \sum x_{2,k} x_{4,k} + a_{3} \sum x_{3,k} x_{4,k} + a_{4} \sum x_{4,k}^{2} = \sum x_{4,k} y_{true,k}$$

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: March 15, 2005

INVENTOR(S)

: Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 7, line 37, please delete

Estimated Value=
$$F(f_{\theta}, \theta 8, \theta)$$
 (5)

please insert --

Estimated Value =
$$F(f_{\theta}, \tilde{\theta}, \ddot{\theta})$$
 (5) --

In column 7, line 48, please delete

$$P_{estimate} = a_0 + a_{1f\theta} + a_2 f_{\theta} \theta + a_3 f_{\theta} \theta + a_4 \theta \theta \theta \qquad (6)$$

please insert --
$$P_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \ddot{\theta} + a_3 f_{\theta} \ddot{\theta} + a_4 \ddot{\theta} \ddot{\theta}$$
 (6) --

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DATED INVENTOR(S) : March 15, 2005 : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 9, lines 40-61, please delete

IADLE

	Various Basis Functions
Function Number	Basis Function
1	$T_{\text{estimate}} = a_0 + a_1 f_\theta + a_2 \bar{\theta} + a_3 \theta$
2	$T_{\text{catimato}} = a_0 + a_1 f_\theta + a_2 \bar{\theta} + a_3 \theta + a_4 \bar{\theta}^2$
3	$T_{\text{estimate}} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \tilde{\theta} + a_4 \tilde{\theta} \tilde{\theta}$
4	$T_{\rm extinuito} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \tilde{\theta} + a_4 f_\theta \tilde{\theta} + a_5 f_\theta \tilde{\theta} + a_6 \tilde{\theta} \tilde{\theta}$
5	$T_{csthmate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta}^2 + a_6 \tilde{\theta}^2$
6	$T_{\text{estimuta}} = a_0 + a_1 f_0 + a_2 f_0 \ddot{\theta} + a_3 f_0 \ddot{\theta} + a_4 \ddot{\theta}^2 + a_5 \ddot{\theta} \ddot{\theta} + a_6 \ddot{\theta}^3$
7	$T_{\text{catimate}} = a_0 + a_1 \ell_0 + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 \ell_{\tilde{\theta}}^2 +$
	$a_3 f_0 \tilde{\theta} + a_6 f_0 \tilde{\theta} + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \tilde{\theta} + a_0 \tilde{\theta}^2$

please insert -- Table 5. Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\dot{\theta}} + a_3 \ddot{\theta}$
2	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \ddot{\theta} + a_3 f_{\theta} \ddot{\theta} + a_4 \ddot{\theta} \ddot{\theta}$
4	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 f_{\theta} \tilde{\theta} + a_5 f_{\theta} \tilde{\theta} + a_6 \tilde{\theta} \tilde{\theta}$
5	$T_{\text{estimate}} = a_0 + a_1 f_{\theta} + a_2 \dot{\tilde{\theta}} + a_3 \ddot{\theta} + a_4 f_{\theta}^2 + a_5 \dot{\tilde{\theta}}^2 + a_6 \ddot{\theta}^2$
6	$T_{\text{estimate}} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \ddot{\theta} + a_3 f_{\theta} \ddot{\theta} + a_4 \ddot{\theta}^2 + a_5 \ddot{\theta} \ddot{\theta} + a_6 \ddot{\theta}^2$
7	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 f_{\theta}^2 $ $+ a_5 f_{\theta} \tilde{\theta} + a_6 f_{\theta} \tilde{\theta} + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \tilde{\theta} + a_9 \tilde{\theta}^2$

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DATED

: March 15, 2005

INVENTOR(S)

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 13, lines 26-44, please delete

TABLE 6

Various S	Sub-Basis	Functions
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Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot pm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_1 = b_{0,1} + b_{1,1} \cdot rpm + b_{2,1} \cdot ltq + b_{3,1} \cdot rpm^2 + b_{4,1} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot pm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6 .	$a_i = b_{0,i} + b_{3,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot rpm \cdot liq + b_{4,i} \cdot rpm^2 + b_{4,i} \cdot liq^2 + b_{4,i} \cdot rpm^2 \cdot liq + b_{7,i} \cdot rpm \cdot liq^2 + b_{4,i} \cdot rpm^2 \cdot liq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s$
8	$a_i = b_{0,i} + b_{1,i} \cdot pm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s + b_{4,i} \cdot pm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s$
9	$\begin{array}{lll} a_{1} = b_{0,1} + b_{1,1} \cdot pm + b_{2,1} \cdot ltq + b_{3,1} \cdot \theta_{9} + \\ b_{4,1} \cdot pm \cdot \theta_{9} + b_{5,1} \cdot ltq \cdot \theta_{9} + b_{6,1} \cdot \theta_{9}^{2} + \\ b_{7,1} \cdot pm \cdot \theta_{9}^{2} + b_{8,1} \cdot ltq^{2} \cdot \theta_{8}^{2} \end{array}$

and insert -- Table 6. Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{i,j} \cdot rpm + b_{2,i} \cdot liq + b_{3,j} \cdot rpm \cdot liq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_{i} = b_{0j} + b_{1j} \cdot rpm + b_{2j} \cdot ltq + b_{3j} \cdot rpm \cdot ltq + b_{4j} \cdot rpm^{2} + b_{3j} \cdot ltq^{2}$
5	$a_{i} = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^{2} + b_{5,i} \cdot ltq^{2} + b_{6,i} \cdot rpm^{2} \cdot ltq^{2}$
8	$a_i = b_{0j} + b_{1j} \cdot rpm + b_{2j} \cdot ltq + b_{2j} \cdot rpm \cdot ltq$ $+ b_{2j} \cdot rpm^2 + b_{2j} \cdot ltq^2 + b_{2j} \cdot rpm^2 \cdot ltq$ $+ b_{2j} \cdot rpm \cdot ltq^2 + b_{2j} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{i,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s$
8	$a_{i} = b_{0,i} + b_{i,j} \cdot rpm + b_{2,i} \cdot liq$ + $b_{3,i} \cdot \theta_{i} + b_{4,j} \cdot rpm \cdot \theta_{s} + b_{5,j} \cdot liq \cdot \theta_{s}$
9	$a_{j} = b_{0j} + b_{0j} \cdot rpm + b_{1j} \cdot liq + b_{3j} \cdot \theta_{s}$ $+ b_{0j} \cdot rpm \cdot \theta_{s} + b_{3j} \cdot liq \cdot \theta_{s} + b_{0j} \cdot \theta_{s}^{2}$ $+ b_{7j} \cdot rpm \cdot \theta_{s}^{2} + b_{0j} \cdot liq^{2} \cdot \theta_{s}^{2}$

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INVENTOR(S)

: Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 13, lines 51-53, please delete

$$\varepsilon = \min_{b_{ji}} \left(\sum_{i=1}^{N} (a_{trained,i} - a_{estimated,i})^{2} \right)$$

$$\varepsilon = \min_{b_{j,i}} \left(\sum_{i=1}^{N} (a_{trained,i} - a_{estimated,i})^{2} \right)$$
(23) ---

please insert --

$$\varepsilon = \min_{b_{j,i}} \left(\sum_{i=1}^{N} \left(a_{trained,i} - a_{estimated,i} \right)^{2} \right)$$
 (23) --

Signed and Sealed this

Nineteenth Day of February, 2008

JON W. DUDAS Director of the United States Patent and Trademark Office